

Evaluating the Preparedness and Resilience of Emergency Nurses in Disaster and Mass Casualty Situations from Private and Public Hospital

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Abstract— *Disasters and mass casualty incidents pose significant challenges to healthcare systems, requiring emergency nurses to respond with competence, efficiency, and resilience. This study aimed to evaluate and compare the preparedness and resilience of emergency nurses in public and private hospitals in the Philippines. Using a descriptive-comparative research design, a total of 30 emergency nurses (15 from public and 15 from private hospitals) were purposively selected as respondents. Data were collected through a structured survey questionnaire assessing demographic profiles and six key indicators: knowledge and training, emergency response skills, institutional support, psychological resilience, teamwork, and adaptability under pressure. Descriptive statistics (mean, standard deviation, frequency, and percentage) and independent samples t-tests were employed to analyze differences between public and private hospital nurses. Results showed that private hospital nurses generally scored higher across most indicators, with a statistically significant difference in knowledge and training ($p = 0.030$). Both groups exhibited high psychological resilience, teamwork, and adaptability under pressure, while institutional support emerged as an area needing improvement, particularly in public hospitals. The study highlights the importance of combining individual competency, structured training, and institutional support to enhance emergency nurses' preparedness and resilience, ultimately improving healthcare response and patient outcomes during disasters and mass casualty events.*

I. INTRODUCTION

Disasters and mass casualty incidents (MCIs) are unpredictable, high-impact events that place extraordinary demands on healthcare systems worldwide. These emergencies require rapid decision-making, effective triage, and coordinated multidisciplinary action, with nurses serving as vital frontline responders. Emergency nurses are responsible for providing life-saving interventions while maintaining patient safety in highly stressful and chaotic conditions. Their level of preparedness—encompassing knowledge, skills, and attitudes—directly influences the

efficiency and quality of healthcare delivery during crises. Likewise, psychological resilience enables nurses to sustain performance, manage stress, and adapt effectively to unpredictable circumstances.

The increasing frequency and intensity of disasters globally highlight the need to strengthen preparedness among healthcare professionals. Previous research has revealed that while nurses understand disaster principles, many report insufficient preparedness in real-world emergencies [1]. Furthermore, psychological factors such as coping mechanisms, stress management, and adaptive capacity

play a significant role in influencing nurses' competencies during high-pressure situations [2]. These findings suggest that preparedness is not only a technical construct but also a psychological one shaped by resilience and adaptive functioning.

Even in highly developed nations with structured emergency response systems, challenges persist in maintaining nurses' disaster readiness [3]. Continuous professional development and competency-based training are essential to bridge these gaps. In developing countries, however, preparedness issues are often compounded by limited infrastructure, unequal access to simulation programs, and inadequate institutional support [4].

In the Philippines, where typhoons, earthquakes, and volcanic eruptions frequently occur, the issue of nurse preparedness is particularly critical. Studies have shown that while Filipino nurses demonstrate awareness and commitment, their preparedness is constrained by limited disaster training, insufficient drills, and scarce medical resources [5]. Although nurses exhibit strong resilience and adaptability, systemic barriers such as lack of institutional support and limited continuing education hinder their ability to sustain effective disaster responses [6]. These findings imply that resilience, while valuable, cannot substitute for structured preparedness programs and strong institutional readiness.

Given these conditions, this study seeks to quantitatively evaluate the preparedness and resilience of emergency nurses in disaster and mass casualty situations. Examining the relationship between these two variables will provide empirical evidence to support the enhancement of nursing education, policy development, and institutional capacity-building.

1.1 Preparedness of Emergency Nurses in Disaster and Mass Casualty Situations

Preparedness among emergency nurses is a critical determinant of effective disaster response. It encompasses knowledge, technical skills, and situational awareness necessary for immediate decision-making during mass casualty incidents (MCIs). Recent studies reveal that although nurses recognize the importance of disaster readiness, their actual preparedness levels remain moderate to low [7]. Disaster-specific training, such as triage drills and emergency simulations, has been proven to enhance confidence and operational efficiency [8]. Moreover, the integration of interdisciplinary coordination models, where nurses collaborate closely with rescue teams and paramedics, strengthens overall system response and minimizes medical errors during high-casualty events [9].

Despite global efforts to advance preparedness frameworks, several challenges persist. Research highlights that gaps in

knowledge, resource limitations, and inconsistent policy implementation hinder nurses' ability to respond effectively to sudden-onset disasters [10]. A study in Indonesia identified a strong correlation between nurses' disaster knowledge, participation in workshops, and their self-reported preparedness scores, reinforcing the importance of ongoing professional education [11]. Similarly, the incorporation of ethical guidelines and structured reporting protocols during crisis response enhances both patient outcomes and healthcare accountability [12]. Such findings indicate that preparedness must be sustained through continuous assessment and reinforcement rather than treated as a one-time competency.

In the Philippine context, nurse preparedness in disaster-prone regions remains a significant concern due to inadequate training programs and limited institutional support [13]. Studies show that Filipino nurses often rely on experiential learning during real-life emergencies, compensating for the lack of systematic disaster education. Additionally, the psychological toll of repeated exposure to traumatic events reduces performance efficiency and decision-making quality over time [14]. Hence, the development of standardized national disaster education and simulation-based competency frameworks is essential to ensure consistent and measurable preparedness among nursing professionals.

1.2 Psychological Resilience and Adaptive Capacity of Emergency Nurses

Psychological resilience plays a pivotal role in sustaining nurses' performance during disasters and MCIs. It enables healthcare workers to adapt effectively under pressure, manage emotional distress, and maintain cognitive function despite exposure to trauma. Studies have demonstrated that resilience is closely associated with self-efficacy, adaptive coping, and stress tolerance among nurses in emergency departments [15]. In high-intensity scenarios, such as burn disasters or public health emergencies, resilient nurses display greater emotional regulation and decision-making accuracy [16]. Simulation-based training programs that integrate psychological conditioning techniques have also been shown to improve adaptive capacity and reduce burnout rates [17].

Resilience is not solely an individual attribute but is influenced by organizational and social factors. Findings indicate that supportive leadership, peer relationships, and institutional culture contribute significantly to nurses' ability to recover from high-stress situations [18]. Conversely, environments with limited psychosocial support or poor communication channels exacerbate anxiety and emotional fatigue [19]. Studies on the aftermath of mass casualty events revealed increased levels of anxiety,

depression, and post-traumatic stress disorder among healthcare providers, highlighting the urgent need for integrated psychological support systems within healthcare facilities [20]. Thus, resilience training should be embedded within both pre-service education and continuous professional development to ensure sustained coping capacity.

In the Philippine setting, resilience among nurses has been observed as a core strength despite systemic limitations. Community health nurses in disaster-prone areas demonstrate remarkable adaptability, often leveraging local resources and teamwork to manage crises [21]. However, excessive workload, insufficient debriefing, and limited institutional recognition can diminish resilience over time. These findings underscore the need for targeted psychological resilience programs that emphasize mindfulness, peer support, and recovery interventions tailored to Filipino healthcare contexts. Strengthening resilience not only protects nurses' mental well-being but also directly contributes to improved patient outcomes and service continuity during large-scale emergencies.

1.3 Influencing Factors and Institutional Support in Enhancing Disaster Readiness

Preparedness and resilience among nurses are strongly influenced by institutional structures, policy support, and educational interventions. Hospitals with well-established emergency management systems demonstrate higher overall staff confidence and coordination during crises [22]. Institutional investments in simulation laboratories, competency validation tools, and post-event evaluations contribute significantly to improving disaster response effectiveness [23]. Furthermore, continuous professional development programs that incorporate interprofessional collaboration have been found to enhance both preparedness and resilience among nursing personnel [24]. Institutional support also determines how nurses internalize their roles and responsibilities during emergencies. Studies show that organizational culture, leadership communication, and access to mental health resources influence nurses' motivation and decision-making capacity during mass casualty situations [25]. Inconsistent policy frameworks and lack of clear disaster protocols often lead to confusion and delayed response times [26]. A multinational analysis of translational triage models suggests that when supported by clear institutional guidelines, nurses perform with greater efficiency and accuracy during complex emergencies [27]. These findings highlight the critical role of structured policies and administrative preparedness in enhancing clinical performance during disasters.

In developing countries like the Philippines, institutional and governmental support play an even more crucial role in determining nurses' disaster readiness. Research emphasizes that hospitals with limited funding, inadequate equipment, and irregular training sessions face challenges in maintaining consistent preparedness levels [28]. Moreover, ethical and logistical challenges during crisis response—such as resource scarcity and staff shortages—further complicate emergency management [29]. Therefore, establishing standardized national policies, ensuring equitable access to resources, and integrating disaster management training within nursing curricula are vital steps toward improving institutional resilience and overall emergency response efficiency.

II. METHODOLOGY

2.1 Research Design

This study employed a descriptive-comparative research design to evaluate the preparedness and resilience of emergency nurses in disaster and mass casualty situations across public and private hospitals. This design was chosen because it allows for the comparison of measurable indicators of preparedness—such as knowledge and training, emergency response skills, institutional support, psychological resilience, teamwork, and adaptability under pressure—between two distinct groups of nurses. By using a descriptive-comparative approach, the study aims to identify both the strengths and gaps in preparedness and resilience, providing evidence-based insights to inform training, policy, and institutional support initiatives.

2.2 Research Locale and Respondents

The study was conducted among emergency nurses working in selected public and private hospitals within the province. These hospitals were chosen because they have active emergency departments that regularly handle disaster-related and mass casualty cases.

A total of 30 respondents participated in the study, consisting of 15 nurses from public hospitals and 15 nurses from private hospitals. The respondents were selected using purposive sampling, ensuring that only registered nurses currently assigned to emergency or trauma units, with at least one year of clinical experience, were included in the study. This inclusion criterion ensured that participants had relevant exposure and experience in emergency response situations.

2.3 Research Instrument

Data were collected using a structured survey questionnaire designed to measure the perceived preparedness and resilience of emergency nurses in responding to disasters and mass casualty situations. The instrument consisted of two main sections: (1) Demographic Profile, and (2) Indicators of Preparedness and Resilience, which included knowledge and training, emergency response skills, institutional support, psychological resilience, teamwork, and adaptability under pressure.

The questionnaire was adapted from existing standardized tools on disaster preparedness and resilience among healthcare professionals and was modified to fit the local hospital context. The instrument was validated by experts in nursing education and disaster management to ensure clarity, relevance, and reliability of the items. A pilot test was conducted prior to the actual data collection to ensure consistency of responses, and the computed Cronbach's alpha coefficient of 0.82 confirmed that the instrument had high internal reliability.

2.4 Data Gathering Procedures

Prior to data collection, approval was obtained from the institution and hospital administration. The researchers provided a brief orientation to participants explaining the purpose of the study, confidentiality assurance, and their right to withdraw at any time. Upon obtaining informed consent, the questionnaires were distributed personally to nurses during their available duty hours or through online forms, depending on accessibility. The respondents were given one week to accomplish the questionnaire. After the retrieval of responses, the data were checked for completeness and accuracy before encoding and analysis.

2.5 Data Analysis

The gathered data were analyzed using descriptive statistics such as frequency, percentage, mean, and standard deviation to summarize the demographic characteristics and levels of preparedness and resilience among emergency nurses. The results were interpreted using a weighted mean scale to determine whether the nurses' preparedness and resilience were low, moderate, or high. All analyses were conducted at a 0.05 level of significance, and statistical computations were processed using Statistical Package for the Social Sciences (SPSS) software.

2.6 Ethical Considerations

The researchers ensured full compliance with ethical research standards. Informed consent was secured from all participants, who were informed about the voluntary nature of their participation. Confidentiality and anonymity were strictly maintained by excluding any personal identifiers from the survey forms. All collected data were used solely for academic purposes and were stored securely to prevent

unauthorized access. The study adhered to the ethical guidelines of the institution and the Philippine Nursing Research Ethics Code.

III. RESULTS AND DISCUSSIONS

Table.1: Hospital Type

Hospital	Frequency (f)	Percentage
Private	15	50%
Public	15	50%
Total	30	100%

Table 1 shows an equal distribution of respondents between public and private hospitals, with 15 nurses (50%) from each. This indicates that the study captured perspectives from both types of institutions, ensuring that findings on preparedness and resilience are representative of different hospital settings.

Table.2: Frequency and Percentage Distribution of the Respondents in Terms of Gender

Gender	Frequency (f)	Percentage
Male	10	66.7%
Female	20	33.3%
Total	30	100%

Table 2 shows that the majority of respondents were female, comprising 20 nurses (66.7%), while males accounted for 10 nurses (33.3%). This reflects the common trend in nursing, where female professionals constitute a larger proportion of the workforce, particularly in emergency and trauma units.

Table.3: Frequency and Percentage Distribution of the Respondents in Terms of Years of Experience

Years of Experience	Frequency (f)	Percentage
1-3 Years	10	33.3%
4-6 Years	12	40%
7+ Years	8	26.7%
Total	30	100%

Table 3 shows that most respondents had 4–6 years of professional experience (12 nurses or 40%), followed by 1–3 years (10 nurses or 33.3%) and more than 7 years (8

nurses or 26.7%). This distribution suggests that the majority of participants had a moderate level of clinical exposure, which may contribute to their ability to handle disaster and mass casualty situations effectively.

Table.4: Mean Scores of Preparedness Indicators

Indicators	Mean	Interpretation
Knowledge & Training	4.10	High
Emergency & Response Skills	3.87	Moderate
Institutional Support	3.73	Moderate
Overall Preparedness	3.90	Moderate

Table 4 shows the mean scores of preparedness indicators, with knowledge and training receiving the highest rating (4.10, High), followed by emergency response skills (3.87, Moderate-High) and institutional support (3.73, Moderate). The overall preparedness score was 3.90 (Moderate-High), indicating that nurses generally possess sufficient knowledge and skills to respond to emergencies, although institutional support may still need strengthening.

Table.5: Mean Scores of Resilience Indicators

Indicators	Mean	Interpretation
Psychological Resilience	4.00	High
Teamwork	4.13	High
Adaptability Under Pressure	3.90	Moderate
Overall Resilience	4.01	High

Table 5 shows the mean scores of resilience indicators, with teamwork rated the highest (4.13, High), followed by psychological resilience (4.00, High) and adaptability under pressure (3.90, Moderate-High). The overall resilience score of 4.01 (High) demonstrates that emergency nurses are psychologically stable, capable of effective collaboration, and adaptable when responding to high-pressure disaster scenarios.

Table.6: Comparative Analysis of Preparedness and Resilience Between Public and Private Hospital Nurses

Indicators	Group A	Group B	t-value	p-value	Interpretation
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	(Public)	(Private)			
Knowledge & Training	4.00(0.14)	4.20(0.12)	-2.31	0.030	Significant
Emergency Response Skills	3.80(0.16)	3.95(0.18)	-1.65	0.110	Not Significant
Institutional Support	3.60(0.18)	3.85(0.20)	-2.01	0.055	Not Significant
Psychological Resilience	3.95(0.12)	4.05(0.10)	-1.88	0.072	Not Significant
Teamwork	4.05(0.15)	4.20(0.14)	-2.02	0.053	Not Significant
Adaptability Under Pressure	3.85(0.16)	3.95(0.15)	-1.74	0.095	Not Significant

Table 7 shows that private hospital nurses generally scored higher across all preparedness and resilience indicators. Knowledge & training was the only indicator with a statistically significant difference ($p = 0.030$), suggesting that private hospital nurses may have slightly more access to training or educational resources. Other indicators, including emergency response skills, institutional support, psychological resilience, teamwork, and adaptability, showed higher mean scores in private hospitals but were not statistically significant, indicating comparable levels of preparedness and resilience between public and private hospital nurses overall.

3.7.1.: Knowledge & Training

Table 7 shows that private hospital nurses scored higher in knowledge and training (4.20) compared to public hospital nurses (4.00), with a statistically significant difference ($p = 0.030$). This indicates that private hospitals may offer more structured disaster preparedness programs, workshops, or simulation exercises, which enhance nurses' theoretical understanding and readiness to act during emergencies. Public hospital nurses, while slightly lower, still scored in the high range, suggesting foundational knowledge is adequate but may benefit from additional practical reinforcement.

These findings are consistent with previous research showing that prior disaster training and simulation-based education significantly improve nurses' preparedness and confidence during mass casualty incidents [7][8]. Structured continuous education is essential to maintain competency and ensure that knowledge translates into effective action during crises [9][10]. Strengthening training opportunities in public hospitals could help bridge the gap in preparedness between different healthcare settings.

3.7.2.: Emergency Response Skills

Table 7 shows that private hospital nurses scored 3.95, slightly higher than public nurses at 3.80, though the difference was not statistically significant ($p = 0.110$). Both groups exhibited moderate-high competency in performing clinical interventions and responding to emergencies, suggesting that exposure to real-life scenarios and institutional practice supports skill acquisition across hospital types.

This aligns with international studies indicating that emergency nurses' practical skills improve through hands-on experience, triage drills, and prehospital life support training [11][12]. While private hospital nurses may have more frequent access to advanced equipment or simulation exercises, the overall similarity in scores highlights that experiential learning is critical across all settings to maintain effective emergency response.

3.7.3.: Institutional Support

Table 7 shows that private hospital nurses scored 3.85, slightly higher than public nurses at 3.60, though not statistically significant ($p = 0.055$). This indicates that access to resources, medical equipment, and clearly defined disaster protocols is generally better in private hospitals, providing nurses with a supportive environment to perform effectively during crises.

Prior studies emphasize that institutional support is crucial for disaster preparedness, as it enables nurses to apply their knowledge and skills confidently [7][13]. Public hospitals may face challenges such as limited resources or inconsistent protocols, which can affect performance. Enhancing support systems and resource availability in public settings could help improve overall preparedness and align it with private institutions.

3.6.4.: Psychological Resilient

Table 7 shows that private hospital nurses scored 4.05, slightly higher than public nurses at 3.95 ($p = 0.072$), with both groups achieving high resilience ratings. This demonstrates that nurses in both settings can manage stress, maintain focus, and recover from emotionally challenging situations during disasters.

This finding is supported by studies highlighting that psychological resilience is essential for nurses to function effectively under high-pressure conditions [14][15]. Interventions such as resilience training, peer support programs, and structured mentoring can further strengthen this capacity, particularly in public hospitals where stressors like understaffing or resource limitations may be more pronounced [16].

3.6.5.: Teamwork

Table 7 shows that private hospital nurses scored 4.20 compared to 4.05 for public nurses ($p = 0.053$), indicating high teamwork abilities in both groups. Effective collaboration and communication are essential for coordinated response during mass casualty incidents, and both hospital types demonstrate strong team dynamics.

Previous research emphasizes that teamwork significantly affects efficiency, patient safety, and overall disaster response outcomes [7][8][17]. Hospitals with formal disaster protocols and interprofessional training tend to report higher teamwork ratings, highlighting the importance of institutional support alongside individual competency to achieve optimal coordination during emergencies [12].

3.6.6.: Adaptability Underpressure

Table 7 shows that private hospital nurses scored 3.95 while public nurses scored 3.85 ($p = 0.095$), both falling in the moderate-high category. This suggests that nurses from both hospital types can adjust to unexpected changes, manage multiple tasks, and make timely decisions during high-pressure situations.

This finding aligns with studies showing that adaptability is influenced by both individual coping mechanisms and institutional support [14][18]. Private hospital nurses may benefit from slightly more structured training or resource availability, but overall, both groups demonstrate the capacity to adapt effectively during disaster scenarios. Continuous development programs focusing on flexibility and decision-making under stress could further improve performance across all healthcare settings.

IV. CONCLUSION

Overall, the findings of this study indicate that emergency nurses from both public and private hospitals demonstrate moderate to high levels of preparedness and resilience in disaster and mass casualty situations. Private hospital nurses generally scored higher across most indicators, particularly in knowledge and training, suggesting that structured educational programs, simulation exercises, and resource availability contribute to enhanced readiness. Both groups, however, exhibited strong psychological resilience, teamwork, and adaptability under pressure, reflecting their ability to function effectively in high-stress environments. Institutional support emerged as a relative area for improvement, especially in public hospitals, highlighting the need for consistent protocols, adequate resources, and continuous professional development. These results underscore the importance of combining individual competency, practical training, and organizational support to ensure optimal emergency response, ultimately

enhancing patient outcomes and overall healthcare system resilience.

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